

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1-94 (Cancelled)

95. (Allowed) A semiconductor wafer scale structure comprising:

a semiconductor wafer that is subdivided into a plurality of integrated circuit die regions, each integrated circuit die region including an integrated circuit structure that includes a plurality of spaced-apart conductive die bond pads arranged in a pattern;

a unitary, substantially planar solid glass sheet having substantially the same size as the semiconductor wafer and having a plurality of prefabricated holes formed therethrough from an upper surface of the solid glass sheet to a lower surface of the solid glass sheet, the prefabricated holes being formed to provide a plurality of hole patterns, each hole pattern corresponding to a pattern of die bond pads formed in a corresponding integrated circuit die region of the semiconductor wafer, each prefabricated hole formed in the solid glass sheet having an associated conductive solder ball bond pad formed on the upper surface of the solid glass sheet in proximity to said prefabricated hole, the conductive solder ball bond pad including a portion that extends into said prefabricated hole to cover sidewalls of said prefabricated hole;

adhesive material disposed between the upper surface of the semiconductor wafer and the lower surface of the solid glass sheet to affix the solid glass sheet to the semiconductor wafer such that each hole pattern in the solid glass sheet is associated with a corresponding pattern of die bond pads; and

for each conductive solder ball bond pad formed on the upper surface of the solid glass sheet, a conductive plug formed in the prefabricated hole in the solid glass sheet associated with said conductive solder ball bond pad and in electrical contact with the portion of said conductive solder ball bond pad extending into said prefabricated hole, the conductive plug extending through the adhesive material to be in electrical contact with the conductive die bond pad associated with said prefabricated hole; and

for each conductive solder ball bond pad, a conductive solder ball formed thereon to thereby provide an electrical connection between said conductive solder ball and an associated conductive die bond pad.

96. (Allowed) A semiconductor wafer scale structure comprising:

a semiconductor wafer that is subdivided into a plurality of integrated circuit die regions, each integrated circuit die region including an integrated circuit structure that includes a plurality of spaced-apart conductive die bond pads arranged in a pattern;

a unitary, substantially planar solid glass sheet having substantially the same size as the semiconductor wafer and having a plurality of prefabricated holes formed therethrough from an upper surface of the solid glass sheet to a lower surface of the solid glass sheet, the prefabricated holes being formed to provide a plurality of hole patterns, each hole pattern corresponding to a pattern of die bond pads formed in a corresponding integrated circuit die region of the semiconductor wafer, each prefabricated hole formed in the solid glass sheet having an associated conductive solder ball bond pad structure associated therewith, the conductive solder ball bond pad structure including a first portion formed on the upper surface of the solid glass sheet in proximity to said prefabricated hole and a second portion that extends through the associated prefabricated hole and through the adhesive material to be in electrical contact with the die bond pad associated with said prefabricated hole;

adhesive material disposed between the upper surface of the semiconductor wafer and the lower surface of the solid glass sheet to affix the solid glass sheet to the semiconductor wafer such that each hole pattern in the solid glass is associated with a corresponding pattern of die bond pads; and

each conductive solder ball bond pad structure having a conductive solder ball formed on the first portion of said conductive solder ball bond pad structure to thereby provide an electrical connection between said conductive solder ball and an associated conductive die bond pad.

97. (New) A semiconductor integrated circuit wafer structure as in claim 95, and wherein the solid glass sheet has a coefficient of thermal expansion that is substantially the same as the coefficient of thermal expansion of the substrate wafer.

98. (New) A semiconductor integrated circuit wafer structure as in claim 95, and wherein the substrate wafer comprises crystalline silicon.

99. (New) A semiconductor integrated circuit wafer structure as in claim 95, and wherein the first portion of the conductive solder ball bond pad structure comprise a metal selected from the group consisting of aluminum, nickel, gold and copper.

100. (New) A semiconductor integrated circuit wafer structure as in claim 95, and wherein the second portion of the conductive solder ball bond pad structure comprises a metal selected from the group consisting of aluminum and gold.

101. (New) A semiconductor integrated circuit wafer structure as in claim 96, and wherein the second portion of the conductive solder ball bond pad structure comprises a conductive polymer.

102. (New) A semiconductor integrated circuit wafer structure as in claim 96, and wherein the solid glass sheet has a coefficient of thermal expansion that is substantially the same as the coefficient of thermal expansion of the substrate wafer.

103. (New) A semiconductor integrated circuit wafer structure as in claim 96, and wherein the substrate wafer comprises crystalline silicon.

104. (New) A semiconductor integrated circuit wafer structure as in claim 96, and wherein the conductive solder ball bond pad structure comprise a metal selected from the group consisting of aluminum, nickel, gold and copper.